CITY OF NEW ORLEANS

Vieux Carré Commission

Guidelines for Exterior Woodwork

EXTERIOR WOODWORK

Wood siding, shingles and trim on a building's wall surface serve both functional and aesthetic purposes. Functionally, exterior woodwork can be a weather-tight building enclosure or "skin", shedding rain to protect wall framing and interior finishes, providing protection from wind and deflecting sunlight.

Aesthetically, woodwork is an important design feature that provides character – adding pattern and texture while casting shadows across a wall surface. The type of wood components, and their detail and arrangement, help identify a building's architectural style and period of construction. The architectural style can also be heightened by finishing with compatible exterior paint colors.

SECTION INDEX

The Vieux Carré Commission (VCC) reviews exterior woodwork materials, features and modifications. This section includes:

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All applicants must obtain a Vieux Carré Commission (VCC) permit as well as all other necessary City permits prior to proceeding with any work. Reviewing and becoming familiar with these *Guidelines* during the early stages of a project can assist in moving a project quickly through the permit approval process, saving an applicant both time and money. Staff review of all details is required to ensure proposed work is appropriate to a specific property.

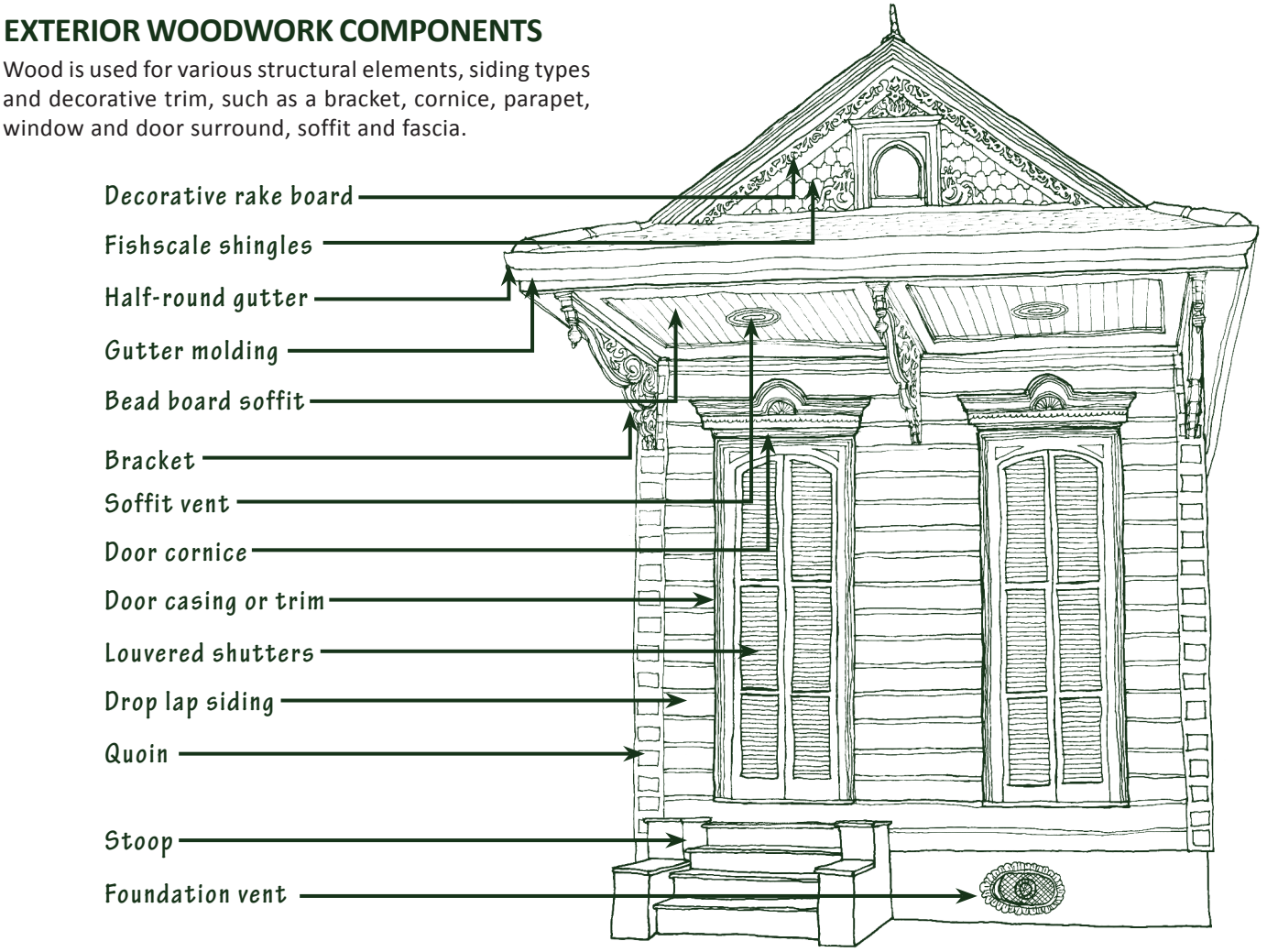
Guidelines addressing additional historic property topics are available at the VCC office and on its website at www.nola.gov/vcc. For more information, to clarify whether a proposed project requires VCC review, or to obtain a property rating of significance or a permit application, contact the VCC at (504) 658-1420.

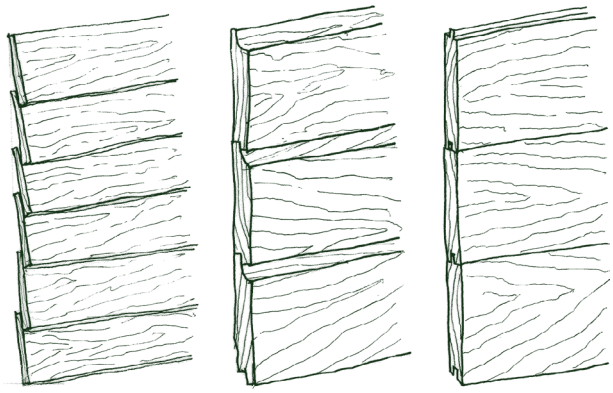
The first step in using these *Guidelines* is to understand a property's color rating. The rating corresponds to the historical and/or architectural significance and then determines what type of change will be permitted and the review process required for each property under the jurisdiction of the VCC.

Review boxes provided throughout the *Guidelines* indicate the lowest level of review required for the specified work. Staff can forward any application to the Architectural Committee (AC) and/or the Commission for further consideration.

EXTERIOR WOODWORK COMPONENTS

Wood is used for various structural elements, siding types and decorative trim, such as a bracket, cornice, parapet, window and door surround, soffit and fascia.

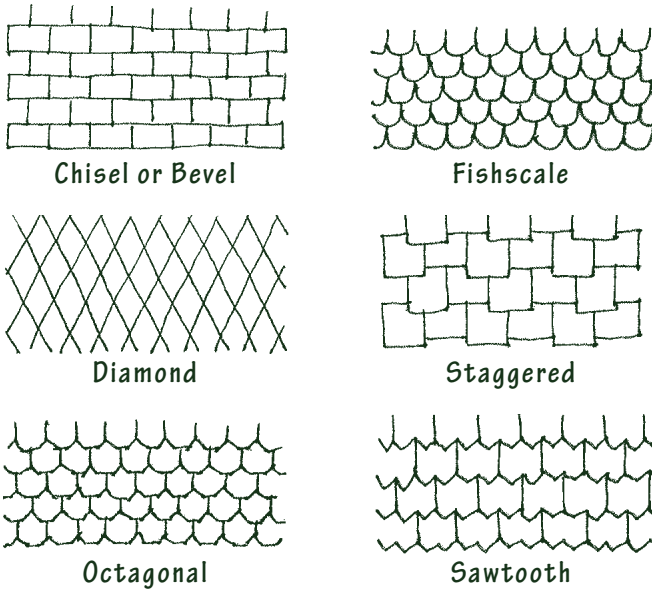




COMMON SIDING TYPES

The most common type of siding for a French Quarter building is weatherboard siding followed by drop lap siding.

- **Weatherboard siding**, also known as clapboard or beveled siding, is made from long boards, tapered across the width. Weatherboards are installed by nailing an upper board overlapping a lower board with joints staggered across the wall surface. Originally, the boards were square, until the second half of the 19th century when tapered siding became common. The profile of replacement siding should be historically appropriate, consistent and aligning rows around a building's corners.
- **Drop lap siding**, also known as ship lap siding, is a flat faced board, about 8- to 12-inches wide with a concave top and notched bottom. Drop lap siding is installed by nailing the notched bottom of the upper board over the concave top of the lower board in a staggered joint pattern. Typically it is found only on the front of a building with weatherboard on the sides and rear.
- **Flush siding** is a series of flat faced boards nailed edge to edge to form the appearance of a flat wall. Generally, it is only found on Greek Revival buildings and installed at the front façade under a protective porch or gallery.



COMMON SHINGLE TYPES

Although generally limited to the front gable end of shotgun houses, there are a variety of decorative wood shingle types in the French Quarter. Similar to weatherboard siding, wood shingles are tapered and installed in an overlapping pattern with staggered joints to minimize potential moisture infiltration. Types of wood shingles include:

- **Chisel or Bevel**: Rectangular shape, similar to roof shingles
- **Fishscale**: Bottom edge of shingle cut in a U-shape with staggered rows forming a fishscale pattern
- **Diamond**: Bottom edge of shingle cut in a V-shape with multiple rows forming a diamond pattern
- **Staggered**: Chisel or bevel shingles with alternating greater and lesser exposure
- **Octagonal**: Bottom corners of shingle cut at a 45˚ angle with multiple rows forming an octagonal pattern
- **Sawtooth**: Bottom edge of shingle cut in a W-shape with adjacent shingles forming a sawtooth pattern

Gable ends of shotgun residences often include decorative woodwork. This example has a decorative rake board, drop lap siding and a central, bulls-eye louver with profiled slats. (Gable-end louvers should be covered in the event of a storm to prevent roof uplift. Refer to Storm Preparedness, page 05-10.)

Exterior trim and ornament can be highly detailed and decorative. In this example, the gable end includes a projecting, bracketed pediment with decorative scrollwork over the window; flush board and paneled "timbering" in the gable end; a bracketed cornice with circular modillions; and square lattice between the paired porch columns. The two-tone paint scheme highlights the wood detailing.

WOOD TRIM & ORNAMENT

Visually, exterior wood trim frames areas of wood siding or shingles and serves as the transition between elements such as a door, window, cornice or porch. Functionally, it seals siding and shingles at joints and openings, to provide a weather-tight building enclosure. Wood trim includes the window or door frame, corner board, rake board, eave and/or wood sill. In addition to wood trim, there are numerous types of wood elements applied to buildings, including quoins, brackets, balustrades and newel posts. (Refer to *Guidelines for Balconies, Galleries & Porches.*)

Historically, the size of a wood trim and ornamental element as well as profiles and details varied with the style of the building and whether it was "high-style" or simple. As a result, wood trim and ornament are considered important features and the VCC requires the retention, maintenance and repair of existing wood trim and ornament. One of the best means to ensure the ongoing preservation of exterior woodwork is to keep it properly attached to the building and painted. (Refer to *Guidelines for Exterior Painting.*)

Similarly, great care should be taken when applying new trim or ornament to an existing building to ensure it is compatible with the building's style. If a replacement component is considered, the dimensions, profiles and detailing should match the historic wood element exactly, and it must have the same painted finish in color and sheen. (Refer to *Guidelines for Exterior Painting.*)

Prior to the removal of an existing piece of deteriorated wood trim or ornament, detailed photographs of the deteriorated condition and the extent of proposed replacement must be submitted to the VCC for review. In addition, detailed drawings or photographs of the proposed replacement trim or ornament must be reviewed prior to installation to ensure the replacement material will match the historic characteristics of the existing condition.

For many residences, the most decorative wood trim is found at the front door. This ornate door frame, or surround, includes a heavy molded cornice, a transom window and bracketed, ribbed trim.

SALVAGED WOODWORK

To find the best quality replacement woodwork, a place to start might be a local architectural salvage store. Because of the high, fine quality of the wood historically used in New Orleans' buildings, salvaged and repaired woodwork will often outlast new replacement woodwork.

Similar to installing new replacement woodwork, take care with salvaged woodwork to match the size, shape, type, profile and detailing of the existing historic woodwork. Just because it is old does not mean it is appropriate. Caution should also be taken when installing salvaged woodwork to prevent introduction of termites or other pests into a building. (Refer to *Termites,* page 05-8.)

Removal of the interior plaster revealed compacted, wet, blown-in insulation resting against wood siding, horizontal framing members and diagonal braces. Prolonged exposure to moisture caused rot in many locations.

WOOD ROT

Almost all wood rot is caused by fungi that break down dead wood to return it back to the earth. These fungi continuously produce spores that become airborne at the interior and exterior of a building. Rot-causing fungi need four basic elements to thrive: oxygen, moisture, food and a moderate temperature. If one of these elements is missing, rot can be controlled.

Because oxygen and moderate temperatures are prevalent in New Orleans and most historic buildings are full of wood, an excellent food source, the best approach to minimize rot is to control moisture. Moisture that leads to wood rot generally comes from the following four sources: ground water, precipitation, a plumbing leak and/or condensation.

Ground water can migrate from the soil into a building from direct contact between wood and soil, improper drainage away from the foundation, vegetation that is too close to the foundation or growing on the building and/or capillary action or rising damp in a masonry foundation wall or pier carrying water from saturated soil up several inches through the masonry to the wood framing.

Precipitation in any form, rain, snow, hail and/or mist, can find its way into a building through a small opening or crevice, becoming trapped within a wall cavity. A painted surface and caulked joints can reduce the potential for moisture infiltration. A blocked or undersized gutter or downspout can overflow and direct water towards a building surface. Rainwater splashing on a hard ground surface can rebound, saturating exterior woodwork. In cold weather, ice build-up along a roof eave that is without appropriate flashing may back-up under shingles and melt.

Leaky plumbing can be sudden, such as a cracked pipe, or slow, where a gradual, unnoticed leak can soak a wood structure until significant damage occurs. A crack in grout or a floor tile around a bathtub, sink or washing machine can discharge enough water to rot wood framing. Periodic inspections for signs of a leak behind a bathtub access panel, within a sink vanity and around a washing machine or dishwasher can alert a property owner to a problem before it becomes serious.

Condensation is an insidious source of moisture because the water comes from air vapor rather than an obvious origin such as rain or a cracked pipe. Condensation occurs when warm moist air contacts a cold surface. Warm air holds more moisture than cold air. If warm moist air comes into contact with a cold surface that is below the dew point temperature, the moisture changes to water droplets on the cold surface. (Refer to *Condensation,* page 05-7.) Some common areas for condensation and possible solutions include:

- High humidity areas such as the kitchen, bathroom and laundry – **Consider**: *An exhaust fan directing humid air to the outside and an exterior clothes dryer vent*
- Crawl space beneath a building where water can condense on framing members such as a sill or joist, especially in a corner with poor air circulation or where the occupied space above is air-conditioned – **Consider:** *Plastic sheathing laid across the ground; Verify foundation vents are clear of debris and vegetation*
- Cold water pipes and ducts in humid weather – **Consider**: *Pipe and duct insulation* (Refer to *Building Insulation,* page 05-11)
- Exterior wood-framed wall on top of a foundation wall or pier – **Consider**: *Installing exterior wall insulation without a vapor barrier, painting interior wall surface with oil-based paint and installing interior humidity control* (Refer to *Building Insulation,* page 05-11)

Leakage through the edge of the roof and a rusty gutter likely caused moisture and storm water to build-up in the soffit, eventually causing the collapse of several boards. The opening can allow access for birds, rodents and pests to nest in the attic. Prior to completing soffit repairs, the cause of the initial water problem should be corrected and the remaining components evaluated for potential reuse.

Deteriorated sections of wood may be replaced without requiring replacement of all of the woodwork. Above, a section of drop lap siding was replaced with new siding and is awaiting painting. To minimize shrinkage gaps between existing and replacement boards, sections of replacement siding should be a minimum of 5-feet in length. To increase longevity, the back, sides and all cut ends of the siding should be primed prior to installation.

WOODWORK MAINTENANCE

Exterior woodwork is a significant feature in defining the style, period and/or character of a building. However, property owners generally do not notice the condition of their exterior woodwork until a problem occurs, or they desire to improve its appearance or reduce maintenance.

Typical exterior woodwork concerns include peeling paint, pest infestation, rot and/or deterioration, often resulting a the lack of periodic maintenance. A property owner should not hide these problems with a coat of paint without addressing its root cause, or the result will be further deterioration.

In most instances, the actual condition of un-maintained exterior wood is generally better than its appearance. A deteriorated component or area does not always necessitate replacing or covering all exterior woodwork. Selective repair or replacement of damaged parts, and implementation of a regular maintenance program, is typically all that is required. Full exterior woodwork replacement is rarely necessary and should be avoided whenever possible.

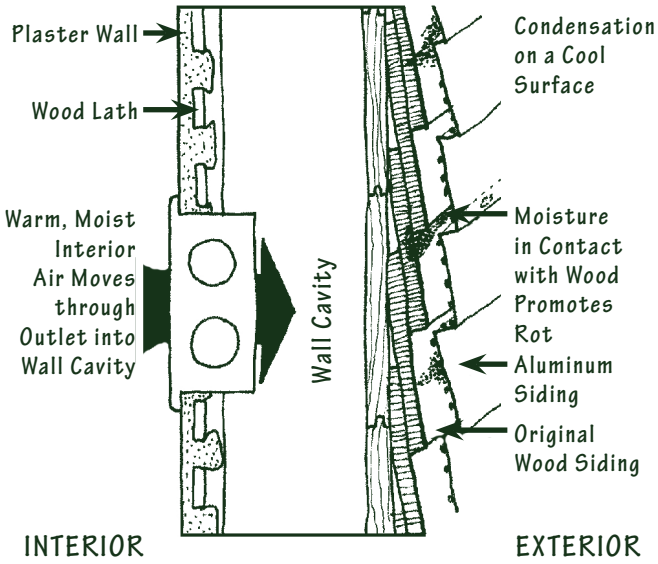
Encapsulation with artificial siding or another material such as new stucco on siding is not allowed by the VCC. Installation of artificial siding or a veneer can damage or require the removal of original wood casing and/or trim. The loss of these features can significantly alter the character of a building. Installation of artificial siding over existing materials can also increase the wall thickness, causing the existing wood trim to appear set back from the wall rather than projecting from it. This can further diminish the visual appearance and character of the building.

WOOD REPAIR OPTIONS

If a portion of an exterior element is deteriorated beyond repair, it is possible to replace only the deteriorated section. Replacement of the entire component or unit might not be necessary. (Refer to *Detecting Wood Rot*, page 05-07.) The two most appropriate methods of repair are epoxy consolidation and the Dutchman.

Epoxy consolidation can be performed in place in the early stages of wood deterioration. The process involves inserting penetrating liquid epoxy into porous wood, generally by injection through small, drilled holes. As the epoxy dries, it hardens and strengthens the deteriorated wood, allowing the maximum amount of historic fabric to be retained.

A Dutchman involves removing the deteriorated portions of wood, not necessarily the entire element, and replacing the removed section in-kind. The replacement piece should match the original in design, shape, profile, size, material and texture. The deteriorated section is removed with a sharp-edged recessed cut and the Dutchman is installed with a tight joint. A replacement siding section should be a minimum of 5-feet in length to minimize the opening of joints over time. When painted, the Dutchman and the existing building fabric should appear continuous. (Refer to photograph, *Guidelines for Windows & Doors*, page 07-5.)



The VCC does not permit covering or encapsulating exterior woodwork. *Covering or encapsulating wood siding or trim can cause and conceal rot of wood elements such as siding and trim.* (Refer to *Condensation*, page 05-7.)

PAINTING EXTERIOR WOODWORK

The VCC requires that exterior woodwork be painted to protect it from the elements and prolong its life. The VCC regulates all exterior paint colors. Appropriate colors vary by building type, architectural style and period of construction. (Refer to *Guidelines for Building Types & Architectural Styles* and *Guidelines for Exterior Painting* for additional information.)

DETECTING WOOD ROT

A simple means of testing for rot is to stab the wood member perpendicular to the grain with an awl or ice pick, particularly where the wood is darker in color. (Refer to diagrams at right.) Then measure the penetration depth and evaluate the type of splintering using the following criteria:

- If the penetration is less than 1/4-inch, the component does not need replacement
- If the penetration is greater than 1/4-inch, the component might need replacement
- If long, dry splinters are produced, the wood is healthy and the component does not need replacement
- If short sections broken across the grain are produced, the component might need replacement

If replacement is needed, it is recommended that the replacement wood be decay and termite resistant and match the size, profile and detailing of the historic woodwork.

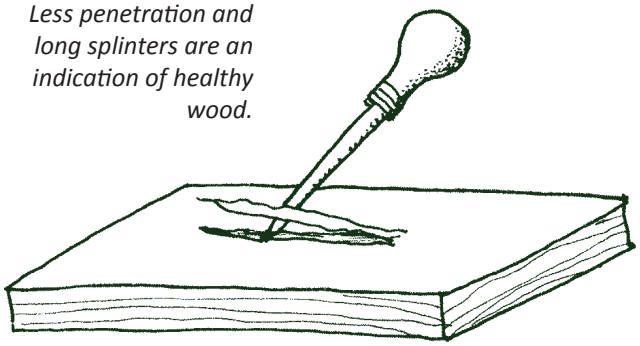
CONDENSATION

Due to modern living standards, condensation has become a significant problem in historic buildings. Today's building interiors include air conditioning and central heating to stabilize temperatures and relative humidity, as well as insulation and vapor barriers that can trap moisture. In addition, now they have moisture-intensive conveniences such as plumbing, bathrooms and laundry and functions like cooking and bathing. While interior conditions have become stabilized, exterior temperatures and relative humidity are continuously changing. Because of the high humidity in New Orleans, vapor is generally transported from the exterior of a building into the interior during warmer months with the process reversed during the winter.

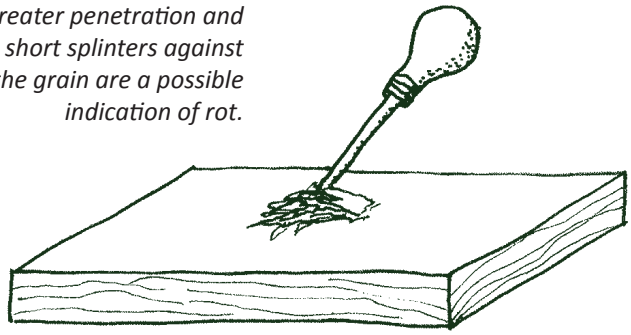
The differences in temperature and relative humidity between the interior and exterior of a building is "bridged" through the thicknesses of the exterior building wall. If the temperature is below the dew point at any location inside a wall, condensation will occur, causing moisture to change into water droplets. In New Orleans' climate, the dew point generally occurs towards the exterior of a wall thickness. Anything installed within a wall thickness that does not allow the passage of moisture vapor through the wall can make the problem worse. Common materials that prevent the passage of moisture vapor are a vapor barrier, in the form of a building wrap system or a component of building insulation, artificial siding (prohibited by the VCC) and/or an impervious coating. (Refer to *Building Insulation*, page 05-11.)

Vinyl and aluminum siding, and some encapsulating paints, do not "breathe" like wood (refer to diagram, page 05-6, and *Specialty Paints, Guidelines for Exterior Painting,* page 09-4) and trap moisture within a building's wall cavity, leading to potential rot, mold and insect damage of the wood structure. In addition, encapsulating materials conceal deterioration from view, reducing the possibility of the problem being noticed early and allowing the condition to worsen before being addressed.

Less penetration and long splinters are an indication of healthy wood.



Greater penetration and short splinters against the grain are a possible indication of rot.



DECAY-RESISTANT WOOD

Some woods are naturally decay resistant, while others have a higher propensity to rot. The naturally decay-resistant woods tend to be denser and harder than rot-susceptible woods such as pine. In some cases, naturally decay-resistant woods are more expensive than common woods. They are not necessarily suited for all uses, such as detailed trim work. Therefore, it is important to know the proposed location and final finish when selecting the wood to be used for a particular project. Available decay-resistant woods include:

- New growth or salvaged Cypress – Refer to *Salvaged Woodwork,* page 05-4
- Cedar
- Mahogany
- Redwood
- Air-dried, pressure-treated, Southern yellow pine
- Pressure-treated wood for framing members

PRIMING & PAINTING EXTERIOR WOODWORK

In addition to selecting appropriate, decay-resistant wood, another effective way to prolong the life of wood elements is to back-prime each piece of exterior wood prior to installation. Back-priming refers to the application of primer to the unexposed side of wood. For the best results, also prime all cut ends. (Refer to *Repainting, Guidelines for Exterior Painting*, page 09-2.)

Priming and painting help to protect wood from rot. **The VCC requires the painting of all exterior woodwork. The VCC strongly recommends regular repainting of all exterior woodwork with oil-based paint every 5- to 8-years.**

TERMITES

Termites are the natural wood recyclers of the environment and represent one of the most insidious problems for buildings and structures in the French Quarter. All buildings include wood and are, therefore, susceptible to termite damage, with Formosan termites being the most destructive type.

Types

There are two general groups of termites, those that live in wood (drywood) and those that tunnel and nest in the soil (subterranean). One of the major distinctions between the two types is that drywood termites do not require contact with soil or moisture to survive. By contrast, subterranean termites live and nest in either wood or the soil, and tunnel through the earth in search of moisture and food creating passageways that connect numerous nests. Subterranean termites need access to water to survive; ground water is available for a colony nesting in the soil. They can also nest in a building where they have regular access to collected water. (Refer to *Wood Rot,* page 05-5.)

The most problematic type of subterranean termite in Louisiana is the Formosan termite, which is native to China and migrated to the southern continental United States in the mid-20th century. Because their colonies are significantly larger than native North American termite varieties, a Formosan colony can damage and consume building materials at a much faster rate.

Termites & Building Materials

Subterranean termites access a structure by tunneling or eating through materials or building a mud tunnel on a surface leading from the soil to a food source. **They migrate through an opening as small as a 16th-inch to infest a building, including through a crevice in a mortar joint, between brick and stucco, through a crack in concrete or behind wood siding, as well as through plaster, an expansion joint, synthetic stucco and insulation, all in search of water and food.** Water is available in buildings through condensation, a plumbing leak and/or deteriorated roofing or flashing, particularly in a high-humidity environment such as the New Orleans.

The principal food for termites is wood, but they also eat wood-based or cellulose materials made from paper or cardboard, which can be found in all buildings in the French Quarter. Common wood building components include: windows and doors; structural elements such as floor and roof framing, interior and exterior wall framing and wood piers in brick-between-post construction; hardwood flooring; as well as baseboards and other trim. Formosan termites also attack and damage non-cellulous material in search of food and water including plaster, insulation, plastic, asphalt, synthetic stucco (EIFS) and thin sheets of soft metal like lead or copper. With wood, moisture and high humidity prevalent, the best way to address termites is to keep them from entering a property or building. It is far less costly and disruptive to prevent termites from entering a property than to stop an infiltration before the infestation compromises a building's structural integrity.

Full tenting is effective at a freestanding building and is required for fumigation to allow termite-killing gas to penetrate all wood elements. Common wall buildings would require tenting all adjoining properties.

Prevention and Treatment

The best way to manage termites is to prevent access to a property. If a property is infested, an aggressive treatment program will likely be required to eradicate the population. It is critical to work with a reputable pest management service to understand whether a property and its buildings are infested and define the best approach for prevention and/or remediation. Because of their large colonies, underground tunnel system and the possibility of above-ground nests in a building or tree, Formosan termites can return in the absence of regular preventative measures.

The infestation of termites within a building in the Vieux Carré is complicated further by the number of properties with common party walls that are shared with one or more adjacent properties, or fencing that extends between buildings along a property line. Once termites are in a property or building, they can easily move into a neighboring site.

There are several treatment methods for termites that can be used alone or in combination:

- **Bait Stations** – Bait stations provide a wood food source mixed with slow-acting termicide – Termites eat the treated wood and return to their nests, killing other members of the colony. To be effective, neighboring properties must be treated and stations monitored and serviced with fresh bait regularly by a pest management company
- **Barrier Treatments** – Barrier treatment involves applying insecticide regularly to the soil around a building at intervals of less than 10-feet – Because most of the buildings in the French Quarter are located along a paved sidewalk, this might be effective at side and rear yards or under the slab of a new building or addition
- **Fumigation** – Fumigation involves tenting a structure and using toxic gas to penetrate the wood elements and kill the termites – Fumigation should be combined with a building or soil treatment to prevent re-infestation
- **Borate** – Borate is a chemical mixed with water to coat wood, forming a barrier to termites – It is best applied at the time of construction or during a major renovation when framing is exposed
- **Pressure-Treated Framing** – New wood framing in contact with the soil or masonry should be pressure-treated and insulation should be at least six-inches from the soil

Termite bait stations are found along sidewalks in the Vieux Carré. Regular service by a pest management company is required for effective termite prevention. Bait stations are highly recommended by the VCC.

Termite Inspection

Some of the basic tools that may be helpful when checking for termites are:

- Flashlight – Termites generally prefer concealed, dark spaces
- Awl or Ice Pick – Similar to the wood rot test (page 05-7), stabbing wood with an awl or ice pick resulting in short splinters or deep penetration can indicate deteriorated wood that might be the result of termites – Because termites tend to eat wood along the grain, tunnels or hollow tubes might be an indication of an infestation
- Moisture Meter – Detects high levels of moisture in wood and building elements that can promote rot and/or attract termites
- Ladder – Facilitates access to attic, exterior building cornices and high spaces for inspections
- Binoculars – Allows view of upper floor windows, cornices and building elements
- Camera – During an inspection, a camera can be used to zoom into inaccessible areas for a closer view – Document changing conditions over time

Termites damage a property as well as its buildings. Moist areas of soil, particularly adjacent to a building, can provide an ideal nesting location for subterranean termites. They can attack and nest in trees or behind dense shrubs or foliage, infesting surrounding trees or buildings and structures. An infested tree can become structurally damaged, allowing limbs to crack in high winds. Treatment options typically require careful drilling into the tree for insecticide application. Termites can also be found in any wood or cellulose element including a wood pile, garden, construction waste and/or lawn furniture as well as a wood fence, shed and/or garage.

Termites have eaten wood along the grain, weakening the strength of the wood sill. The pressure from the wood stud has crushed the top of the weakened wood sill causing a structural problem for the wall above.

Termites have eaten through the wood window. Although there is no visual evidence of termite damage at the remainder of the window, inspection by a pest management professional is recommended.

At the exterior of a building, inspections should include identifying potential access routes for termites as well as possible infestation locations:

- **Brick, Mortar and Stucco** – Soft mortar and stucco used in the construction of many French Quarter buildings can easily be tunneled through by termites as they seek wood for food – Carefully check where masonry and wood components meet
- **Crawlspaces** – Concealed areas can allow termites to enter a building without being noticed – Check for mud tubes on piers, foundations and chain walls leading down to the ground and deterioration of floor framing
- **Door and Window Frames and Wood Siding** – Tap on door and window frames and exterior wood siding to determine if they sound hollow – If they do, stab with an awl or pick to verify termite infiltration
- **Balconies, Galleries and Porches** – All exterior wood components, particularly those in contact with the ground such as a step, are susceptible to termite damage – Tap and stab with an awl or pick to verify termite infiltration
- **Roof Cornices, Eaves and Gutters** – A deteriorated gutter can saturate wood, promoting rot and providing a water source and a home for termites – Tap and stab with an awl or pick to verify the presence of rot and/or termites
- **Equipment and Utility Penetrations** – Condensation from an air compressor can provide a water source for termites, while a penetration for electric, gas and/or water service into a building can provide a termite pathway

At the interior of the building, it is important to check all rooms, closet and storage areas, including the attic. A moisture meter can identify an area in a wall or floor that is moist and susceptible to infestation as can staining or discoloration on a surface. When investigating a finished material, care should be taken not to damage a visible surface. Areas that should be checked include:

- Windows and doors
- Baseboards and trim
- Wood floors
- Framing in the attic and behind plumbing access panels
- Wall surfaces for unusual paint blistering

STORM PREPAREDNESS

The biggest cause of damage from a significant storm, such as a hurricane, typically results from high winds, with flooding the secondary cause. Strong winds can damage a building or structure through:

- Uplifting the structure
- Racking or twisting the building frame
- Sliding or overturning the structure from its foundation
- Creating a void or an opening, such as an opening in a roof, that allows storm water to penetrate the building
- Blowing an element such as a balcony, gallery or porch off of a building, creating a void or opening
- Impacting the building from flying debris

Flooding can damage a building and/or structure through:

- Sliding the structure off of its foundation
- Introducing storm water to building materials leading to rot, mold and/or deterioration

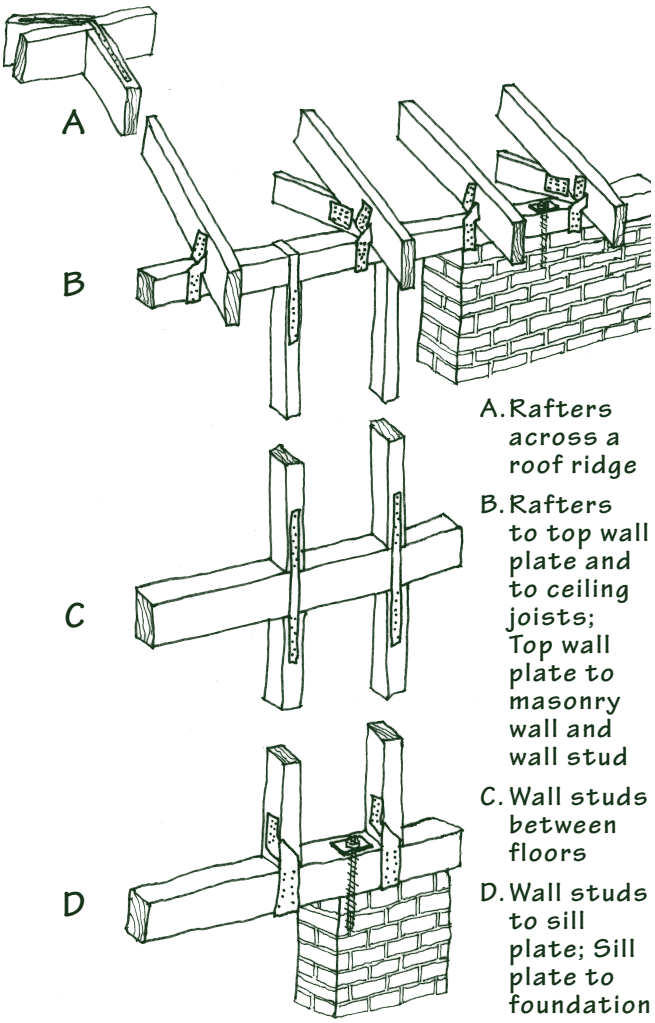
Almost all buildings in the French Quarter have wood framing for the roof and floors even if the walls are masonry. Wood-framed portions of a structure are more likely to be damaged by the effects of a significant storm. The connections between wood elements are nailed together with some earlier types of construction including pegged or mortised joints. The movement of a building in high wind tends to loosen connection joints, compromising the structural integrity of a building, which could lead to increased damage from a strong, sustained wind.

Fortunately, there are various connectors, including ties, straps and bolts, that can help protect a structure during a high wind. These connectors are attached directly to the framing under the roofing or sheathing, and work to transfer the load from the top of the roof, through all of the connections, down to the foundation. They are made of galvanized or stainless steel to prevent rusting and require multiple, long nails at each end to be effective.

Fasteners are attached directly to the framing or foundation; therefore, they are easiest to install as part of new construction. However, some connectors have been developed to be installed on an existing structure and should be considered as part of any significant project such as a roof replacement or siding repair. Because they are concealed within a building's structure, they are not subject to VCC review, but it is important to consult with an architect or structural engineer to determine the appropriate type of connectors for each specific building condition.

KEEP IN MIND…

- Consultation with an architect or engineer is highly recommended prior to undertaking a connector installation project so that the installation is tailored to the specific needs of the building
- Not all contractors are familiar with the installation of hurricane protectors – Improper installation can be ineffective and hazardous in the event of a storm


A
B
C
D
A. Rafters across a roof ridge
B. Rafters to top wall plate and to ceiling joists; Top wall plate to masonry wall and wall stud
C. Wall studs between floors
D. Wall studs to sill plate; Sill plate to foundation

Hurricane connectors are located at the end of each wood framing member to reinforce the structural link from the top of the roof down to the foundation. This creates a continuous vertical load path throughout the wall system. (For clarity, horizontal floor joist connectors have not been shown.) As specific construction assemblies vary, this diagram is for general reference only, and consultation with an architect or engineer is highly recommended. In addition, it is important that the foundation and piers are well maintained because wind load and storm water can weaken mortar joints.

ADDITIONAL STORM PREPAREDNESS INFORMATION

Please refer to the following *Guidelines* for additional storm preparedness information:

- *Roof Systems & Storm Preparedness, Guidelines for Roofing,* page 04-2
- *Repointing Historic Masonry, Guidelines for Masonry & Stucco* page 06-8
- *Storm Protection, Guidelines for Windows & Doors, page* 07-16
- *Storm Preparedness, Guidelines for Balconies, Galleries & Porches,* page 08-10

BUILDING INSULATION

Insulation can be an efficient and cost-effective means of reducing heat loss in a building and associated heating and cooling bills. Before installing insulation, ensure all unintended cracks and openings in a building are sealed and caulked including around pipe penetrations, chimneys, electrical outlets and lights. A blower air test can locate an unintended exterior wall opening or gap. (Refer to *Weather Stripping & Caulk, Guidelines for Windows & Doors,* page 07-17.) In an unheated attic, insulate the top of the attic access hatch and ducts. In a crawlspace, keep insulation at least 6-inches from the ground to minimize termite infestation, insulate exposed piping and ducts; and install plastic over the ground to reduce condensation. Some of the most common forms of insulation can be found in the table below. **It is highly recommended that all of the insulation manufacturer's safety and installation recommendations be followed.**

TYPE / MATERIAL	BENEFITS	DISADVANTAGES
Blanket – Batts & Rolls • Fiberglass • Mineral Wool • Plastic Fiber • Natural Fiber	• Sized to fit between standard spaced studs, joists and/or beams that are relatively free of obstructions such as pipes, conduits and braces • Is relatively inexpensive • Can be a do-it-yourself project – Wear protective clothing and eye wear	• Can become matted-down when wet • Can cause a condensation problem and rot wood framing due to the vapor barrier on most blanket insulation – Install without backing or with air barrier only – If installing with a vapor barrier, install barrier facing exterior • Should not be "stuffed" around an obstruction – Can be a fire hazard around damaged electrical wiring
Radiant Barrier & Reflective Insulation • Foil-faced kraft paper • Plastic film • Polyethylene bubble • Cardboard	• Reflects radiant heat, such as sunlight, away from living space – Can be highly effective in an attic • Sized to fit between standard spaced studs, joists and beams • Bubble systems – Can be effective around an obstruction • Can be a do-it-yourself project	• Must face an air space, such as an attic, to be effective • Can act as a vapor barrier and cause condensation and rot wood framing members if not properly installed • Cardboard – Can become a home for nesting pests or insects such as termites and carpenter ants – Borate treatment can corrode metal pipes, conduit and electrical wiring
Loose-Fill & Blown-In Insulation • Cellulose • Fiberglass • Mineral Wool	• Good for an irregularly spaced area and around obstructions • Requires minor disturbance of finishes for installation • Some materials – Can be poured rather than blown-in	• Must be blown-in using special equipment • Settles over time, requiring additional application, particularly in a wall • Cellulose, the most common, is essentially newspaper – Can become a sponge when wet and rot wood framing • Cellulose – Can become a home for nesting pests or insects such as termites and carpenter ants – Borate treatment can corrode metal pipes, conduit and electrical wiring
Foam Board • Polystyrene • Polyisocaynurate • Polyurethane	• Relatively little thickness for a high insulation value • Can be installed under an un-vented, low-sloped roof	• Made from fossil fuels – Can have toxic fumes and be highly flammable • Must be cut to fit around an obstruction – Requires complete removal of a wall finish • Can be tunnelled through by termites and carpenter ants, increasing infestation risk
Sprayed Foam & Foamed-in-Place • Cementitious • Phenolic • Polyisocaynurate • Polyurethane	• Can be used for an irregularly spaced area and around obstructions • No disturbance of finishes is typically required for installation	• Made from fossil fuels, can have toxic fumes and be highly flammable • Requires professional installation – Adheres to all surfaces, can have voids if not properly installed – Relatively expensive installation • Can be tunnelled through by termites and carpenter ants, increasing infestation risk • Open-cell type – Is softer, but often not a vapor barrier • Closed-cell is a vapor barrier – Can cause condensation problems and rot at wood framing – Removal generally requires "chiselling out" between all framing members

Wood Repair & Replacement Review

Dimensioned drawings of a proposed wood trim and/or ornament, including all details, must be submitted and approved by the VCC prior to any installation

Maintain, replace or install appropriate exterior wood siding, shingles, trim and/or ornament in-kind to match existing in all aspects

1 **2** **3** Staff

Replace exterior wood siding, shingles, trim and/or ornament with wood that does not match existing in all aspects

1 **2** Architectural Committee

3 Staff

Replace or encapsulate exterior wood siding, shingles, trim and/or ornament with other material

1 Commission

2 **3** Architectural Committee

KEEP IN MIND…

- Use of stock moldings, trim and ornament is rarely appropriate for an historic building – They generally do not replicate historic profiles or detailing
- Repair, maintenance and painting of woodwork can be potentially dangerous (Refer to *Safety Precautions, Guidelines for Exterior Maintenance,* page 03-16)
- Select wood species and grade most appropriate for a task – Utilize quality materials for the longest life span
- Prime the back, sides and cut ends of all wood elements prior to installation to minimize damage from rot (Refer to *Repainting, Guidelines for Exterior Painting*, page 09-2)
- Install caulk appropriate to the installation (Refer to *Weather Stripping & Caulk, Guidelines for Windows & Doors*, page 07-17)
- Verify contractor will obtain required approvals and permits and is experienced in meeting VCC requirements
- Select a reputable installer who is likely to remain in business and respond if there is a future problem
- Hold final payment, such as 25%-30% of project cost, until all work has been completed properly

WOODWORK MAINTENANCE GUIDE

THE VCC RECOMMENDS:

- **Conducting semi-annual inspections** of all exterior wood elements to verify condition and determine maintenance needs. Look for signs of deterioration, including peeling paint that might indicate a moisture problem. Look for veins of dirt on exterior walls that might indicate termites or evidence of other pests such as carpenter ants. (Refer to *Wood Rot,* page 05-5 and *Termites*, page 05-8.) Clean exterior surfaces annually in warm weather with a garden hose, household detergent and a natural bristle brush. **Avoid using a power washer that can force water into a wall cavity through crevices, damage decorative details and/or accentuate the grain of the wood.**

THE VCC REQUIRES:

- **Maintaining and repainting** exterior woodwork on a regular basis. A high quality paint job can last 5 to 8 years. Address any moisture or deterioration problem prior to painting. Scrape and hand sand where possible to avoid removing or damaging a decorative detail. **Rotary sanding is not permitted.** Apply high quality and compatible oil-based primer and paint to a clean and dry surface. (Refer to *Repainting, Guidelines for Exterior Painting,* page 09-2.)
- **Repairing a smaller area of deterioration** by reinforcing or patching. A small crack or gouge can be repaired with an exterior wood filler, glue or epoxy. A loose element can be refastened with careful nailing or drilling.
- **Replacing**, selectively, a deteriorated element when it is beyond repair. A replacement wood component should be the same size, shape, design and profile as the historic wood element. It might be helpful to take a sample of the historic wood to the lumber yard or millwork shop to ensure the best match. Sanding wood filler between the seams of the new and old wood prior to painting will help provide a smooth finish.
- **Replacing** exterior wood if necessary when deterioration of exterior woodwork is severe and extensive. Decorative woodwork should be retained whenever possible because it is a character defining element. A replacement wood element must have the same appearance as the historic woodwork including size, profile and visual characteristics. Replacement siding material should be installed in the original pattern, matching the exposure and alignment relative to historic building elements such as a door and/or window frame. Select an appropriate replacement wood species for use and location. Salvaged wood trim can be used as replacement material if it matches the size, shape, configuration, proportions and profile of the historic component where it will be installed. (Refer to *Salvaged Woodwork,* page 05-4.)

THE VCC DOES NOT ALLOW:

- Removing or encapsulating siding, trim, a decorative feature or a trim element such as a bracket, spindle, cornice, column, post or railing

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www.nola.gov/vcc

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Prepared by:
Dominique M. Hawkins, AIA, LEED AP
Preservation Design Partnership, LLC
Philadelphia, PA. www.pdparchitects.com